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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,239	07/25/2001	David S. Manery	130109.421	6846

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EXAMINER	
CREPEAU, JONATHAN	
ART UNIT	**PAPER NUMBER**
1746	

DATE MAILED: 09/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/916,239	MANERY, DAVID S.	
	Examiner	Art Unit	
	Jonathan S. Crepeau	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,4-7,10,12-18,20,23-25 and 29-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10,12,13,20,23-25 and 29-33* is/are allowed.

6)☒ Claim(s) *2,4-7,14 and 17* is/are rejected.

7)☒ Claim(s) *15,16 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 2, 4-7, 10, 12-18, 20, 23-25, and 29-33. Claims 2, 4, 6, 14, and 17 remain rejected under 35 USC §102 for the reasons of record, and claims 5 and 7 are newly rejected under 35 USC §103. Claims 10, 12, 13, 20, 23-25, and 29-33 are allowed and claims 15, 16, and 18 contain allowable subject matter. As the new rejection of claims 5 and 7 was not necessitated by amendment, this action is non-final.

Claim Rejections - 35 USC § 102

2. Claims 2, 4, 6, 14, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Fuglevand et al (U.S. Patent 6,387,556). The reference is directed to a system comprising a fuel cell stack (14) and a battery (32) (see Fig. 2; col. 7, line 57). The system further comprises a fuel cell control system including a power supply switch (38) which is configured to couple power from the fuel cell stack to the fuel cell control system at a first time (i.e., after startup), and to couple power from the battery to the control system at a second time (i.e., during startup) (see col. 7, lines 32-62; col. 9, lines 60-65). Regarding claim 2, the fuel cell stack is couplable to provide power to recharge the battery (see col. 7, line 62). Regarding claims 4, 14, and 17, the battery is coupled to the control system when the fuel cell stack voltage is below a threshold voltage and the fuel cell stack is coupled to the control system when the stack voltage is higher

than a threshold voltage (see col. 7, line 43). Regarding claim 6, the power supply switch is responsive to a change in operating state of the fuel cell system (i.e., startup to steady-state operation) (col. 7, line 57). Regarding claims 14 and 17, the system comprises a microcontroller (30) and a plurality of fuel cell sensors (58, 55, 61, 40). The power switching circuit (38) comprises an actuator (33) for receiving signals from the microcontroller (see Fig. 2).

Thus, the instant claims are anticipated.

Claim Rejections - 35 USC § 103

3. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuglevand et al.

Fuglevand is applied to claims 2, 4, 6, 14, and 17 for the reasons stated above.

However, the reference does not expressly teach a power supply switch responsive to a stack voltage to couple power from the battery to the control system when the voltage across the stack *falls below* a threshold voltage, as recited in claim 5.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to modify the system of Fuglevand to achieve the claimed configuration. As noted above, Fuglevand teaches that battery power is utilized during startup when the fuel cell power is not sufficient. Thus, during shutdown, it would also be beneficial to decouple the fuel cell since its power would not

be sufficient to power the control system. As such, the subject matter of claims 5 and 7 would be rendered obvious to a person of ordinary skill in the art.

Response to Arguments

4. Applicant's arguments filed June 9, 2004 have been fully considered but they are not persuasive insofar as they apply to the present rejections. Applicants assert, regarding claim 4, that "[i]t appears that Fuglevand only teaches the automatic coupling of the fuel cell cartridges 14 to the power bus 60 in response to the end of the start-up condition, simply assuming or not caring whether the fuel cell cartridges 14 are producing sufficient voltage to support the load(s) on the power bus 60." However, it is believed that the disclosure of Fuglevand remains anticipatory of the claimed voltage detection configuration. The reference teaches that the control system "can verify that at least one electrical characteristic, such as voltage and/or current, of respective fuel cell cartridges 14 has been reached before closing switching device 38 to couple power bus 60 with an associated load 22" (col. 7, line 42). Thus, it is believed that the reference does in fact teach that an actual voltage measurement is used to control the switching of the fuel cell to the control system.

Regarding claim 14, Applicants assert that "Fuglevand fails to teach or suggest the use of two voltage thresholds." However, it is submitted that the voltage thresholds of Fuglevand are of the same value (it is noted that the allowability of different threshold voltage values has already been indicated). Thus, in Fuglevand, power is supplied from the battery to the controller when

the voltage is less than a threshold value and power is supplied from the fuel cell to the control system when the voltage is greater than a second threshold value, which is the same as the first threshold value). Thus, claim 14 is still seen as anticipated by Fuglevand.

Allowable Subject Matter

5. Claims 10, 12, 13, 20, 23-25, and 29-33 are allowed.

6. Claims 15, 16, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

The reasons for allowance of claims 13, 15, 16, 18, 20, 20, and 23-25 were set forth in the previous Office action and remain applicable.

Independent claim 12 recites, among other features, a power switching circuit comprising a voltage responsive switching circuit, a stack supply switch, and a battery supply switch. Fuglevand does not teach or fairly suggest such a configuration.

Independent claim 29 recites a method that uses a stack supply switch and a battery supply switch, wherein the battery supply switch is set to uncouple the battery from the on-board power supply. Fuglevand also does not teach or fairly suggest this configuration.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jonathan Crepeau
Patent Examiner
Art Unit 1746
September 15, 2004